

California's Plan to Reduce Diesel Particulate Matter Emissions

Why is ARB concerned about emissions from diesel-fueled engines?

Diesel engines emit a complex mixture of air pollutants, mainly composed of gaseous and solid material. The visible emissions you can see in diesel exhaust are known as particulate matter. These include many carbon particles (also called soot) as well as other gases that become visible as they cool. In 1998, California identified diesel particulate matter (diesel PM) as a toxic air contaminant based on its potential to cause cancer and other adverse health effects. In addition to PM, emissions from diesel-fueled engines include over 40 other cancer causing substances. Overall, emissions from diesel engines are responsible for the majority of the potential airborne cancer risk in California.

What are the major sources of diesel PM?

The major sources of diesel PM are the 1,250,000 diesel-fueled engines and vehicles in use in California. This includes trucks and buses you see on our highways, large off-road equipment such as bulldozers and tractors, engines used in portable equipment such as cranes, refrigerating units on trucks, and stationary engines used to generate power or pump water. All together, these diesel engines release over 28,000 tons per year of particulate matter into California's air. About two-thirds of these emissions come from off-road equipment.

Typical Diesel Equipment

On-Road

- Trucks
- Buses
- Motor Homes

Portable

- Cranes
- Drilling Equipment
- Portable Pumps

Off-Road

- Construction Vehicles
- Agricultural Equipment
- Trains
- Marine Vessels

Stationary

- Power Generation
- Stationary Pumping Equipment

What does ARB plan to do to reduce emissions from diesel equipment?

In September 2000, the Air Resources Board (ARB) approved a comprehensive Diesel Risk Reduction Plan (Plan) to reduce diesel emissions from both new and existing diesel-fueled engines and vehicles. The goal of the Plan is to reduce diesel PM emissions and the associated health risk by 75 percent in 2010 and 85 percent or more by 2020.

What does the Plan propose?

The Plan is a roadmap that identifies the steps ARB will be taking to develop specific regulations to reduce diesel PM emissions. The Plan identifies 14 measures that will be developed over the next several years to:

- Establish more stringent emission standards for new diesel-fueled engines and vehicles;
- Establish particulate trap retrofit requirements for existing engines and vehicles where traps are determined to be technically feasible and cost-effective;
- Require the sulfur content of diesel fuel to be reduced to enable the use of advanced diesel PM emission controls; and
- Evaluate alternatives for diesel-fueled engines and vehicles.

What new engine standards will be developed?

For new on-road vehicles, the Plan envisions engine standards that will reduce diesel PM emissions by at least 90 percent from current on-road standards. The emission standards for new off-road vehicles would be similar to those for on-road vehicles.

What about existing diesel engines?

For existing diesel engines and vehicles, the Plan envisions the addition of exhaust emission control systems, collectively referred to as retrofit technology. The retrofit technology most likely to be used are diesel particulate traps, which can reduce diesel PM emissions by at least 85 percent. An important aspect of the retrofit effort will be identifying those applications where retrofits make sense. To help in this task, the ARB has formed an International Retrofit Advisory Committee to identify feasible and effective ways to implement diesel PM retrofits. Our goal is to ensure that existing diesels are as clean as cost-effective technology allows.

Will diesel engines used in agriculture be regulated?

Both new and existing diesel agricultural engines will be evaluated for control. We are sensitive to the economic impacts that this program may have and will work closely with the agricultural community to develop practical solutions that obtain the greatest pollution reduction for the dollars spent. The ARB will work with the agricultural industry to assess which existing engines should be retrofitted. This will take into account how and where the equipment is used, and its value and remaining life.

How much will this cost?

Detailed cost analysis will be done during the development of each control measure. We expect the costs to be similar to those associated with ARB's programs for controlling emissions from gasoline-fueled engines and vehicles.

What are the benefits of implementing the Plan?

The Plan will significantly reduce diesel PM emissions and the associated potential cancer risk, decrease noncancer health effects (such as asthma and bronchitis), and improve visibility.

What are the next steps?

ARB will work with stakeholders to develop the specific measures needed to implement the Plan. Public workshops and meetings on specific measures will begin in December 2000. ARB will also work to develop and implement voluntary programs, including incentives-based programs like the Carl Moyer Program. We will also work with manufacturers and owners on demonstration projects to ensure that retrofit technology will work for each application. To be notified about workshops and meetings, sign up on the web at <http://www.arb.ca.gov/toxics/diesel/diesel.htm>.

For more information?

Please contact the ARB's Public Information Office at (916) 322-2990, or ARB diesel web site at <http://www.arb.ca.gov>.

You may obtain this document in an alternative format by contacting ARB's ADA Coordinator at (916) 322-4505 (voice); (916) 324-9531 (TDD, Sacramento area only); or (800) 700-8326 (TDD, outside Sacramento).